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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,346	09/24/2003	Mohammad Jaber Borran	873.0119.U1(US)	7074

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EXAMINER	
BURD, KEVIN MICHAEL	
ART UNIT	PAPER NUMBER
2611	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action Before the Filing of an Appeal Brief	Application No. 10/671,346	Applicant(s) BORRAN ET AL.	
	Examiner Kevin M. Burd	Art Unit 2611	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 04 April 2007 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *41-42,45-50,53-58*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: see appended sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

Response to Arguments

1. Applicant does not address the previous claim rejection under 35 USC 101 nor does the applicant address the claim objection to claim 55 in the after final response. Both the claim rejection under 35 USC 101 and the claim objection are maintained.

2. Applicant's arguments filed 4/4/2007 have been fully considered but they are not persuasive. As stated in the previous office action, Falzon discloses "minimization of the Kullback-Leibler distance for estimating the parameters of the generalized Gaussian model ensures a minimization of the cost of coding in accordance with information theory" in paragraph 0024. Minimizing this term amounts therefore to choosing a model distribution p2, which will produce the most efficient symbols for coding a distribution source p1 (paragraph 0068). Therefore, D(p2||p1) will be minimized (paragraph 0069). The symbols are selected according to a Kullback-Leibler distance. Therefore, the constellation points for transmission of those symbols are separated according to that Kullback-Leibler distance.

In addition, MPEP 2111.04 states "claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure". Examples of claim language that may raise a question as to the limiting effect of the language in a claim are (B) "wherein" clauses. MPEP 2111.04 further states a "whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited". The wherein clause stated in the amended independent claims state

"wherein the selected signal constellation consists of a plurality of symbols separated from one another by a maximized minimum conditional distribution that comprises a Kullback-Leibler distance." No step is being performed in the wherein clause. The clause expresses the result of the step of "selecting one of several signal constellations based on the determined characteristic". The data (signal constellations) stored in a storage medium of claim 49 is not a component of the device of claim 49 and therefore does not limit the claim to a particular structure.

The rejection of the amended claims after final will be as stated below.

Claim Objections

3. Claim 55 is objected to because of the following informalities: Claim 55 is dependent on claim 55. It is assumed for examination purposes claim 55 is dependent on claim 54. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 57-58 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim language does not correspond to the Interim Guidelines for patent Subject Matter Eligibility and MPEP 2106. The examiner suggests the claim recite a computer program of computer readable

instructions tangibly embodied on a computer readable medium and executable by a digital data processor....

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 41, 42, 45, 46, 49, 50, 53, 54, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al (US 6,560,445) in view of Falzon et al (US 2003/0210824).

Regarding claim 41, Fette discloses a method of transmitting a signal. A transmitter modulates information onto a plurality of carriers (abstract). An actual signal-to-noise ratio value is received (column 9, lines 56-61). According to the received SNR value, a table or set of tables that permit automatic optimization of the communications link under varying conditions (column 9, lines 45-48) is accessed and the appropriate constellation is chosen (column 9, lines 37-40). The transmitter will modulate the carrier wave according to the selected constellation (column 9, lines 17-65). Fette does not disclose the symbols of the signal constellations are separated from one another by a Kullbeck-Leiber distance. Falzon discloses "minimization of the Kullback-Leiber distance for estimating the parameters of the generalized Gaussian model ensures a minimization of the cost of coding in accordance with information theory" in paragraph

0024. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Falzon into the method of Fette.

Regarding claim 42, as stated above, Fette discloses the signal constellation is selected according to the SNR. Figure 17 discloses the method as well.

Regarding claim 45, Fette discloses communication with a system 1000 in accordance with the invention is robust to impairments introduced by propagation effects of the communication link 1005 such as fading (column 10, lines 15-17).

Regarding claim 46, Fette discloses the transmitting of the selected constellation is done in a transmitter diversity system (figure 18). Therefore, the constellation selected is based on the number of transmit antennas.

Regarding claim 49, Fette discloses a device comprising a transmitter with an antenna coupled to the transmitter (figure 18). A storage medium stores a plurality of signal constellations (column 9, lines 37-48). Transceiver 1003 comprises a processor (column 9, lines 17-20) that receives an actual signal-to-noise ratio value (column 9, lines 56-61). According to the received SNR value, a table or set of tables that permit automatic optimization of the communications link under varying conditions (column 9, lines 45-48) is accessed and the appropriate constellation is chosen (column 9, lines 37-40). The transmitter will modulate the carrier wave according to the selected constellation (column 9, lines 17-65). Fette does not disclose the symbols of the signal constellations are separated from one another by a Kullback-Leibler distance. Falzon discloses "minimization of the Kullback-Leibler distance for estimating the parameters of the generalized Gaussian model ensures a minimization of the cost of coding in

accordance with information theory" in paragraph 0024. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Falzon into the method of Fette.

Regarding claim 50, as stated above, Fette discloses the signal constellation is selected according to the SNR.

Regarding claim 53, Fette discloses communication with a system 1000 in accordance with the invention is robust to impairments introduced by propagation effects of the communication link 1005 such as fading (column 10, lines 15-17).

Regarding claim 54, Fette discloses the transmitting of the selected constellation is done in a transmitter diversity system (figure 18). Therefore, the constellation selected is based on the number of transmit antennas.

Regarding claim 57, Fette discloses a processor (column 9, lines 17-20) for executing a computer program shown in figure 17 and described in column 9, lines 17-65. An actual signal-to-noise ratio value is received (column 9, lines 56-61). According to the received SNR value, a table or set of tables that permit automatic optimization of the communications link under varying conditions (column 9, lines 45-48) is accessed and the appropriate constellation is chosen (column 9, lines 37-40). The transmitter will modulate the carrier wave according to the selected constellation (column 9, lines 17-65). Fette does not disclose the symbols of the signal constellations are separated from one another by a Kullback-Leibler distance. Falzon discloses "minimization of the Kullback-Leibler distance for estimating the parameters of the generalized Gaussian model ensures a minimization of the cost of coding in accordance with information

theory" in paragraph 0024. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Falzon into the method of Fette.

Regarding claim 58, as stated above, Fette discloses the signal constellation is selected according to the SNR.

6. Claims 47, 48, 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fette et al (US 6,560,445) in view of Falzon et al (US 2003/0210824) further in view of Huang et al (US 6,373,832).

Regarding claims 47 and 48, the combination of Fette and Falzon disclose the method stated above. The combination does not disclose the number of transmit antennas is determined from a message received over a wireless channel. Huang discloses a communication method with enhanced multipath diversity. A transceiver sends a feedback signal indicating the number of useful signals being received and the first transceiver responds by selecting and using a desirable number of transmit antennas (abstract). This technique of the invention could be applied in both transmit directions (column 3, lines 24-41). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the method of communication of Huang into the method of the combination of Fette and Falzon. The transmitting of the number of useful signals used in the transmitting of the data will allow the number of transmit antennas to be minimized to the number of antennas that are transmitting useful information, minimizing the amount of power consumed by the transceivers.

Regarding claims 55 and 56, the combination of Fette and Falzon disclose the device stated above. The combination does not disclose the number of transmit antennas is determined from a message received over a wireless channel. Huang discloses a communication device with enhanced multipath diversity. A transceiver sends a feedback signal indicating the number of useful signals being received and the first transceiver responds by selecting and using a desirable number of transmit antennas (abstract). This technique of the invention could be applied in both transmit directions (column 3, lines 24-41). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the device for communication of Huang into the device of the combination of Fette and Falzon. The transmitting of the number of useful signals used in the transmitting of the data will allow the number of transmit antennas to be minimized to the number of antennas that are transmitting useful information, minimizing the amount of power consumed by the transceivers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd
4/22/2007

KEVIN BURD
PRIMARY EXAMINER